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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/917,649	07/31/2001	Mark J. Feldstein	79,856	1077

7590 10/27/2003

Naval Research Laboratory, Code 1008.2
4555 Overlook Ave., S.W.
Washington, DC 20375-5320

EXAMINER

LUDLOW, JAN M

ART UNIT	PAPER NUMBER
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1743

DATE MAILED: 10/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/917,649

Applicant(s)

FELDSTEIN, MARK J.

Examiner

Jan M. Ludlow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☒ Interview Summary (PTO-413) Paper No(s). 11.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948). 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other:

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1. The amendment after final rejection filed on May 14, 2003 has been entered.
2. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.
3. Claim 29 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.
4. The written description of the low Reynolds number embodiment is inadequate because it is unclear what applicant intends by "...channels in the system may be configured to *have minimal cross sectional dimensions such that the selective fluid drawing may or may not be a low Reynolds number fluid flow.*" [end of page 13, emphasis added]. It is not clear what this statement means. Are the "minimal cross sectional dimensions" related to the characteristic dimension used in calculating the Reynolds number? Are the "minimal cross sectional dimensions" some combination of ranges of width and height (not specified) or cross sectional area (also not specified)? Are the dimensions limited to the smallest possible dimensions that provide "not a low Reynolds number flow" or are dimensions larger than the minimal dimensions also included? Are the minimal cross sectional dimensions for "not a low Reynolds number flow," the smallest dimensions that increase the Reynolds number to a value higher than "low"? Note that a search of the patent literature for the terms (minimum cross sectional area) same (Reynolds number) yielded only one relevant reference, in which the "minimum cross-sectional free area" is used to calculate the fluid velocity

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used in calculating the Reynolds number (see, Bosworth '244, col. 3, lines 9-10). Thus, "minimal cross-sectional dimensions" is not an accepted term in the art relative to Reynolds numbers and requires explanation.

Further, it is not clear what numerical value distinguishes a low Reynolds number from a "not low" Reynolds number. While the examiner acknowledges that the term "low Reynolds number" is used frequently in the art without definition, the examiner did not find a uniform definition of the term when one was provided. See, e.g., Wu et al 6,297,061, col. 5, lines 30-40; Blankenstein 6,432,630, col. 4, line 25; Beebe et al. 6,523,559, col. 6, line 64; and Spence et al 6,540,895, col. 16, line 17. Is turbulent flow the defining characteristic of a "not low" Reynolds number, or can a Reynolds number be "not low" and the device still produce laminar flow? Further, Reynolds number is dependent upon fluid characteristics, and the fluid is not a claimed element of the invention. Applicant is requested to clarify this term and either point to the portion of the specification that provides the definition, or provide evidence of an art-recognized definition of the term.

5. Claim 29 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 29, lines 4-5, "minimal cross sectional dimensions such that the selective fluid drawing is not a low Reynolds number fluid flow" is unclear. The phrase is unclear for the reasons given above with respect to the lack of adequate written description. Further, the phrase is unclear because "low" is a relative term lacking comparative

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basis. As noted above, the term "low Reynolds number" has various meanings as used in the art, and because applicant has not defined which of the many numerical ranges is intended, the term is indefinite. The term is further indefinite because it is defined by the velocity, viscosity and density of the fluid and the fluid is not a positively recited element of the invention. In other words, two identical apparatuses, having the same channel dimensions and the same negative pressure source may be functional to provide either low Reynolds number flow or "not low" Reynolds number flow, dependent upon the characteristics of the fluid placed inside them. The examiner notes that "the selective fluid drawing" of lines 4-5 has been interpreted to refer to the functional limitation of subsequent lines 11-12.

6. In that the examiner cannot determine from the specification and/or claim language what channel dimensions are encompassed by the instantly claimed invention, no meaningful search for the instant claim can be performed until the claim language is clarified.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jan M. Ludlow whose telephone number is (703) 308-4039. The examiner can normally be reached on Monday-Thursday, 11:30 am - 8:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (703) 308-4037. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Jan M. Ludlow
Primary Examiner
Art Unit 1743

Jml
October 20, 2003